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**Environmental Assessment  
for  
MOHAVE DROP ZONE**



**U.S. Army Yuma Proving Ground  
Command Technology Directorate  
Environmental Sciences Division  
Yuma, Arizona 85365**

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**September 27, 2001**

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## ABBREVIATIONS AND ACRONYMS

<b>AGL</b>	Above Ground Level
<b>ADNL</b>	A weighted DNL
<b>AGFD</b>	Arizona Game and Fish Department
<b>AR</b>	Army Regulation
<b>ASM</b>	Arizona State Museum
<b>BLM</b>	Bureau of Land Management
<b>CDNL</b>	C weighted DNL
<b>COE</b>	United States Army Corps of Engineers
<b>DNL</b>	day night level
<b>dB</b>	decibel
<b>DoD</b>	Department of Defense
<b>DZ</b>	Drop Zone
<b>EA</b>	Environmental Assessment
<b>ENMP</b>	Environmental Noise Management Program
<b>FAA</b>	Federal Aviation Administration
<b>FNSI</b>	Finding of No Significant Impact
<b>FY</b>	Fiscal year
<b>ICUZ</b>	Installation Compatible Use Zone
<b>IOs</b>	Isolated Occurrences
<b>INRMP</b>	Integrated Natural Resources Management Plan
<b>KFR</b>	Kofa Firing Range
<b>km</b>	Kilometer
<b>KNWR</b>	Kofa National Wildlife Refuge
<b>MCAS</b>	Marine Corp Air Station
<b>NEPA</b>	National Environmental Policy Act
<b>NRHP</b>	National Register of Historic Places
<b>PM<sub>10</sub></b>	Particulate Matter under 10 Microns
<b>REC</b>	Record of Environmental Consideration
<b>SHPO</b>	State Historic Preservation Office
<b>SOPs</b>	Standing Operating Procedures
<b>TSPI</b>	Time and Space Position Instrumentation
<b>UXO</b>	Unexploded Ordnance
<b>USA</b>	United States Army
<b>USDA</b>	United States Department of Agriculture
<b>USFWS</b>	United States Fish and Wildlife Service
<b>YPG</b>	Yuma Proving Ground



**U.S. ARMY YUMA PROVING GROUND  
YUMA, ARIZONA**

**ENVIRONMENTAL ASSESSMENT  
MOHAVE DROP ZONE**

**SEPTEMBER 27, 2001**

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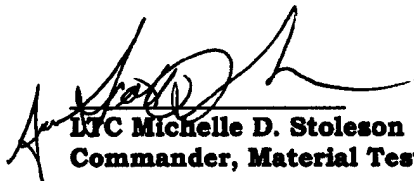
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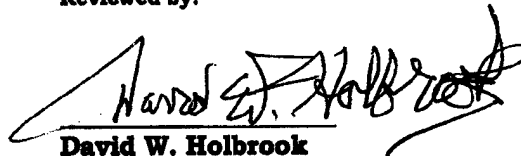
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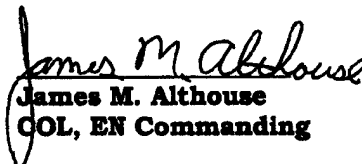
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**FINDING OF NO SIGNIFICANT IMPACT  
For  
MOHAVE DROP ZONE**

**U.S. ARMY YUMA PROVING GROUND  
Yuma, Arizona**

The Finding of No Significant Impact (FNSI) is intended to be a separate document as specified in Army Regulation 200-2, Chapter 5 (40 CFR 1508.13). This FNSI has been bound along with the appropriate Environmental Assessment (EA) for the purposes of convenience only.

The attached *Environmental Assessment for the Mohave Drop Zone*, September 2001, has been prepared to assess the potential environmental impacts associated with the Proposed Action of establishing a new drop zone in the north central Cibola Region at Yuma Proving Ground.

The Proposed Action involves: 1) the construction of an additional access route and grading to improve an existing unnamed dirt road in the area; 2) the placement of a transportable office/shelter outside the drop zone; and 3) the construction of two new observation sites.

Alternatives evaluated in this EA for potential impacts on environmental resources were: 1) the Proposed Action - Alternative A, and 2) the No-Action - Alternative B. Potential impacts to soils, biological and cultural resources were determined to be associated with both alternatives. However, implementation of standard best management practices during activities associated with the Proposed Action would minimize impacts.

As a result of the analysis in this EA, it was concluded that the implementation of the Proposed Action - Alternative A would not have significant impact on the existing environment. To ensure that impacts to the environment are avoided or minimized, the mitigation and management methods discussed in Chapter 4 of the referenced EA will be followed.

This environmental assessment adequately evaluated the environmental effects of the Proposed Action. This FNSI is based upon the environmental assessment.

  
James M. Althouse  
COL, EN Commanding

# **ENVIRONMENTAL ASSESSMENT**

**for**

## **MOHAVE DROP ZONE**

**at**

**U.S. Army Yuma Proving Ground**

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**September 27, 2001**

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## 1.0 INTRODUCTION

U.S. Army Yuma Proving Ground, located in southwest Arizona (Figure 1), is the Army's primary location for test and evaluation of air cargo delivery of military equipment and personnel, in a desert environment. The Aviation Systems Division at YPG proposes to establish a high-altitude drop zone (DZ) and associated data acquisition instrumentation facilities within the north-central portion of the Cibola Region. This area, to be known as the Mohave DZ, will be centrally located within the airspace boundaries of existing Restricted Area R-2306B, will consist of a 3 kilometer (km) diameter target area and an additional 2 km buffer zone. This Environmental Assessment (EA) has been prepared to support the decision making process pursuant to the requirements of the National Environmental Policy Act (NEPA).

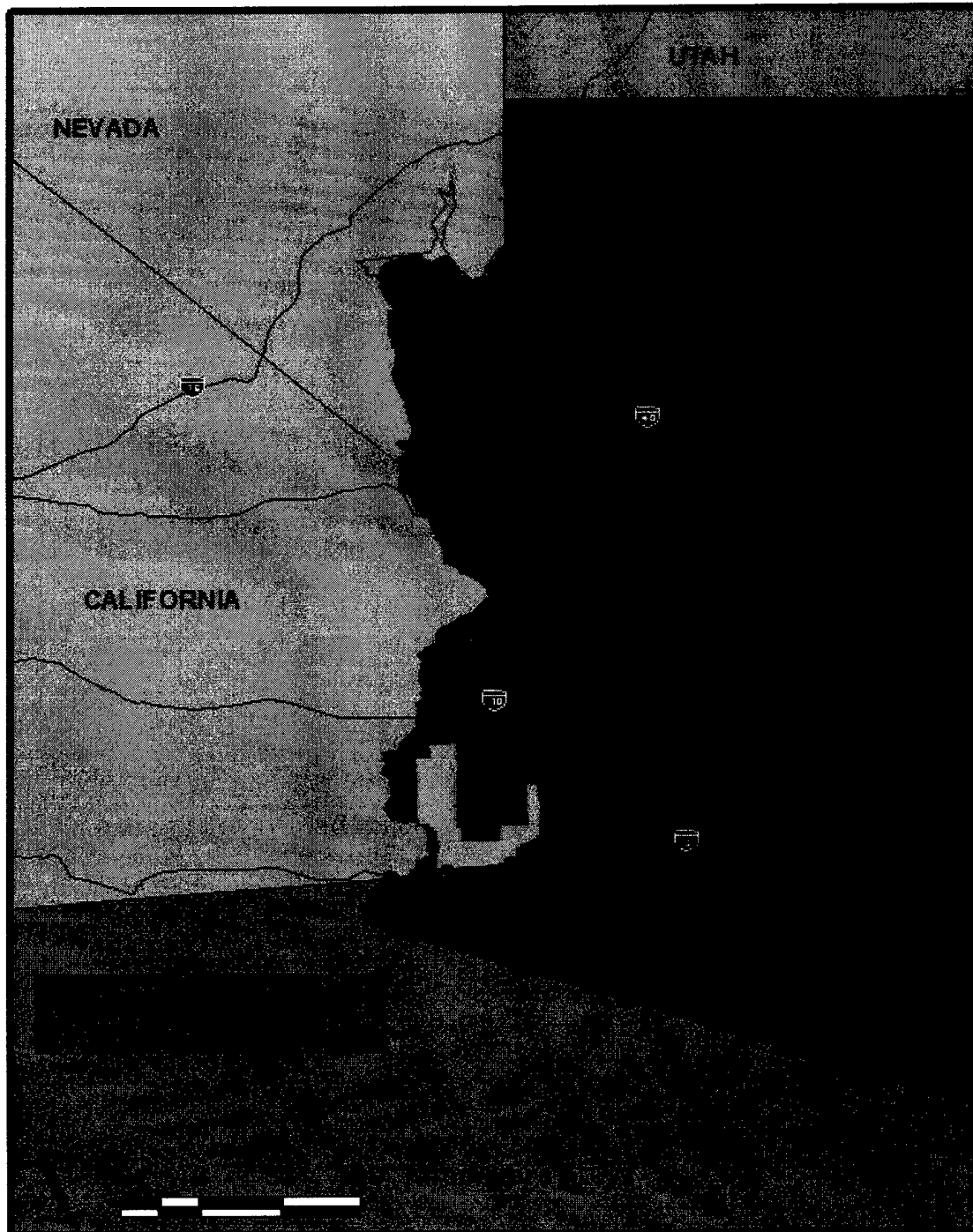
### 1.1 PURPOSE OF THE PROPOSED ACTION

The purpose of the Proposed Action is to establish a new DZ for high-altitude airdrop testing of various air cargo delivery systems at YPG, in support of the defense mission of the United States. The Mohave DZ and the instrumentation proposed will enable the safe acquisition of accurate time and space position instrumentation (TSPI) data for airdrop loads exiting aircraft at altitudes predominantly in excess of 10,000 feet and up to 35,000 feet and provide the ability to track these loads through multiple stages of performance to ground impact. Using data collected, customers will be able to determine performance parameters for parachute systems, guidance packages, and ancillary systems being tested, as well as evaluate any necessary design changes based on accurate and reliable data.

### 1.2 NEED FOR THE PROPOSED ACTION

The emergence of unmanned guided airdrop systems, especially those dropped from high-altitude, has produced the need to test and refine these systems. In addition, the ability to airdrop larger and heavier loads from high-altitudes and from release points significant distances from the intended landing zone has resulted in a greater potential to lose control of these airdrop loads while they are in the self-guided descent mode. As a consequence, a larger and more remote DZ within a larger airspace boundary and with accurate tracking equipment capable of monitoring the load throughout its entire descent is required. Such a DZ must also be relatively free of trees but still accessible to the heavy vehicles required for retrieval of some of the loads. The area around the DZ must also be tolerant of occasional malfunctions where the loads could damage vegetation on the ground or miss the drop zone entirely.

Existing DZs at YPG are experiencing encroachment from nearby unrelated facilities, are too close to public transportation routes, have limited surface space for load impact and buffer zones, and have poor geometry for data gathering and tracking purposes. Without a new DZ facility, high-altitude cargo releases from aircraft have a high potential to land outside the boundaries of the narrow drop zone currently available, and the potential for safety problems exists at a level that requires excessive manpower to mitigate. YPG is unable to effectively position tracking systems on YPG property and, therefore, will not be able to provide highly accurate TSPI data required by YPG customers. The ability to drop loads from high-altitude will continue to be limited by wind speed and direction because these variables affect aircraft flight paths within YPG restricted airspace. The proposed Mohave DZ on the North Cibola Range meets all of the requirements for a high-altitude DZ. There are no other locations within the United States where high-altitude air cargo releases and/or tracking of high-altitude airdrop loads can be accomplished with the degree of safety and accuracy that would be associated with the proposed Mohave DZ.



Source: YP © 1999

**Figure 1. General Location of Yuma Proving Ground in Southwestern Arizona**

## 2.0 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action is to establish a new DZ on YPG (Mohave DZ) that will provide improved safety, data acquisition, and logistics for high-altitude airdrops, including guided delivery systems. The proposed Mohave DZ would be located in the north-central portion of the Cibola Region and within military airspace (Restricted Area R-2306B). Data acquisition facilities would be located adjacent to the DZ. Figure 2 shows the Cibola Region of YPG and the locations of the Proposed Action (Alternative A - Mohave DZ) and the No-Action Alternative (Alternative B - Continued Use of La Posa DZ) in relation to existing airspace boundaries.

### 2.1 BACKGROUND

The Federal Aviation Administration (FAA) designates airspace away from congested areas for certain military activities and other uses. One such airspace type is designated restricted airspace. A Restricted Area, such as R-2306B, is airspace designated in *Federal Aviation Regulation 73* within which the flight of non-participating aircraft, while not wholly prohibited is subject to restriction. Restricted Areas shall be designated when necessary to confine or segregate activities considered to be hazardous should they come into conflict with non-participating aircraft. R-2306B restricts aircraft operation in the entire area within its boundaries extending from ground level to 80,000 feet. Military operations are conducted within designated military airspace and follow specific procedures to maximize flight safety for civilian and military aircraft. Scheduling of military flights, aircraft safety procedures, and control of operations within the airspace at YPG are governed by written procedures<sup>1</sup> (YPG 2000b).

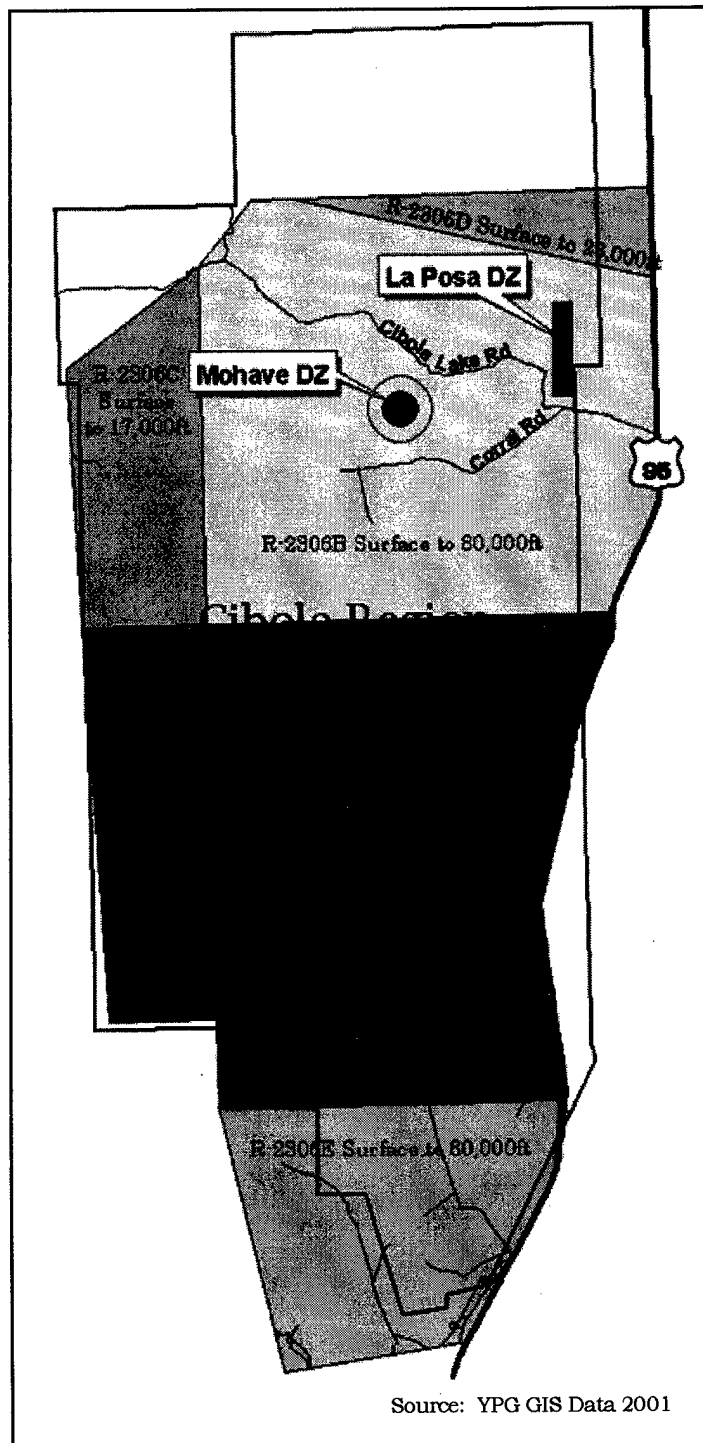
YPG airspace is divided into restricted areas for airspace management purposes. In the Cibola Region R-2306B covers most of the region (see Figure 2). Two smaller Restricted Areas are directly adjacent to R-2306B on its western and northern boundaries. These are R2306C and R-2306D, respectively. To the east, R-2308A provides a Restricted Area that controls aircraft operations over the Kofa National Wildlife Refuge. Each designated airspace area has specific altitude restrictions. Airspace from surface to 80,000 feet is available for R-2306B and R-2306A. Airspace from surface to 17,000 feet is available for R-2306C and 23,000 feet for R-2306D. Airspace in R-2308A, over Kofa National Wildlife Refuge, starts at 1,500 feet AGL and extends up to 80,000 feet (YPG 2000b).

Drop zones, or DZs, are designated areas that are used by military aircrews to conduct cargo and personnel airdrop operations. A DZ is required to provide airlift aircraft, such as the C-130 and C-141 transport aircraft, with designated areas to practice deployment of airdrops or, as in the case at YPG, to also test equipment associated with airdrops. Operational procedures for the use of DZs at YPG are also governed by written procedures (YPG 2000b).

High-altitude airdrops have been conducted at the La Posa DZ in the northeast side of the Cibola Region. This DZ is designed primarily for personnel drops, such as from C-17 aircraft, and has a long narrow north-south configuration. It is also parallel to U.S. Highway 95, and some test drops have drifted east of the DZ and landed on property not under the control of YPG (Stewart 2001).

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<sup>1</sup> Yuma Proving Ground Restricted Airspace is managed by the Air Traffic and Airspace Officer located at the Marine Corps Air Station (MCAS)-Yuma, and controlled by the Federal Aviation Administration, Los Angeles Air Route Traffic Control Center (YPG 2000b). Airspace management procedures allow efficient real-time use of this designated military airspace, with YPG releasing any airspace that is not in use back to MCAS-Yuma for other military, civilian, or commercial use.



**Figure 2. Cibola Region of YPG and location of the Proposed Action and Alternative B**

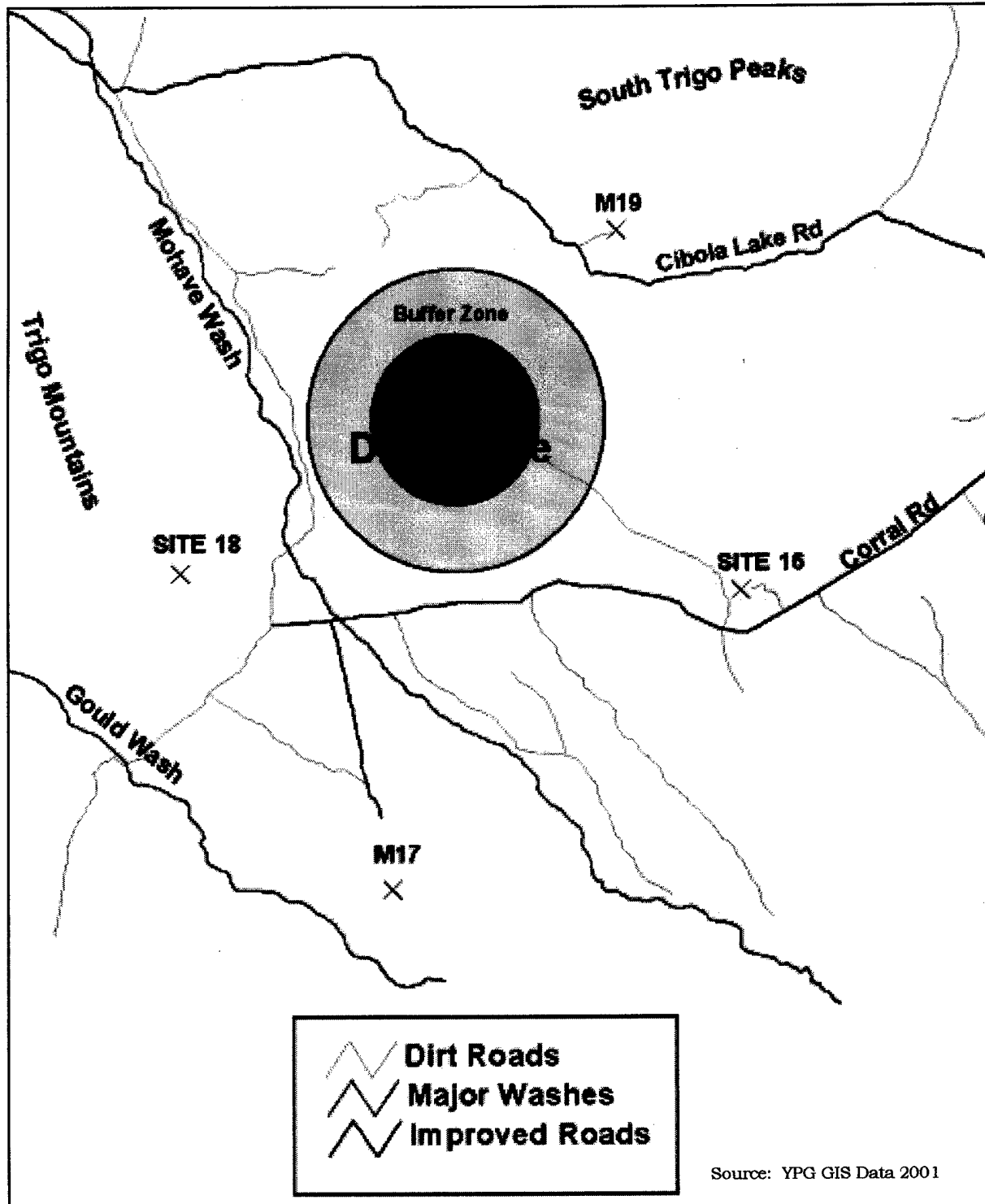
## 2.2 PROPOSED ACTION - ALTERNATIVE A

The location for the proposed Mohave DZ was selected because it is a more remote area that can accommodate a larger and more remote DZ and buffer zone. Adjacent sites are available to provide optimum locations for the installation of data acquisition instrumentation. The location is also well separated from potential conflicts with public transportation routes or encroachment from other unrelated YPG facilities. The DZ would consist of a target area 3 km in diameter and an additional surrounding 2 km buffer zone, as shown in Figure 3. Vehicle access into the area to retrieve airdrops would be required, including some large trailer trucks and mobile off-road cranes used to lift heavy loads.

Airdrops could occur at altitudes from near ground level up to 35,000 feet. High-altitude airdrops would occur at altitudes ranging from 10,000 feet up to 35,000 feet. Test drops would include performance evaluation and data gathering on all types of airdrop components and would include the following:

- Aircraft airdrop systems (onboard hardware and software)
- Personnel and cargo parachute systems including parachute deployment systems for both conventional and guided parafoil systems
- Parachute hardware, including attachment components
- Commanded and autonomous parachute guidance systems
- Airdrop platforms, airdrop containers, and the interaction between multiple loads dropped together
- Rigging equipment (lashings and hardware devices)
- Clockwork, barometric, and pyrotechnic event controllers for timed events
- Data acquisition equipment used during airdrop testing
- Ground-based and onboard descent tracking systems
- Landing systems and impact attenuation systems (e.g., paper honeycomb cushioning, airbags)
- Ground impact releases
- Airdrop qualification for tactical military equipment and supplies intended for combat airdrop using any of the prescribed means of delivery.

To conduct test airdrops, YPG solicits airlift services from the U.S. Air Force Military Airlift Command and other airlift units. Volunteers from these flying units are then selected to conduct scheduled airdrops. Aircraft come to YPG from all over the United States to have the opportunity to conduct airdrops at YPG in support of the test programs. In return, these units receive the opportunity to acquire aircrew training, and improve airdrop proficiency. Examples of test programs that would benefit from an improved larger high-altitude DZ are recovery systems, short and long-range air launch target systems, and semi-rigid deployable wing test programs.



**Figure 3. Proposed Mohave Drop Zone and Surrounding Area**

Other potential uses of the Mohave DZ include some low-level airdrop missions, helicopter drops, and proficiency training by visiting military units. Low-level drops generally would occur at altitudes of 1,200 to 1,250 feet above ground level (AGL). Personnel drops, such as proficiency training, would also occur and would generally be at altitudes below 18,000 feet, although some drops may go as high as 25,000 (Sorensen 2001). In addition, some personnel airdrops have previously been conducted at the proposed Mohave DZ location (Sorensen 2001).

### **2.2.1 Construction**

Construction of buildings or other structures would not be required within the 3-km target area or 2 km buffer zone of the DZ. One transportable office/shelter will be placed to the east, off the DZ and up on high ground to act as an observation and visitor control point. Some grading would be required to flatten and widen (12 to 16 feet) the existing unnamed dirt road that starts from Corral Road south of Site 16 and runs west-northwest onto the desert pavement, allowing access to the DZ and to the observation shelter (see Figure 3). One additional access route at the southwest corner of the DZ is to be provided for those loads landing toward the western side of the DZ. This route will only open access across the wash and not proceed any further. No access is to be provided from Cibola Lake Road.

Instrumentation to provide TSPI data associated with airdrops would be placed at existing Sites 16 and 18 and new Sites M17 and M19 shown on Figure 3. A Contraves Mount would be placed on a concrete pad at each location to house a Digital Video Theodolite. Existing concrete pad areas (16 feet X 20 feet) at Sites 16 and 18 would be utilized. New concrete pads would need to be constructed at Sites M17 and M19.

### **2.2.2 Airspace/Drop Zone Utilization**

In Fiscal Year (FY) 2000, a total of 2,327 sorties were flown in R-2306B for all types of missions (Sorensen 2001). These sorties were primarily YPG test sorties but also included proficiency-training missions for visiting units. This level of utilization of the airspace is representative of expected annual airspace usage in the future. Less than 1 percent of the sorties were to conduct airdrops of the type that would be associated with the Proposed Action.

It is anticipated that approximately 150 annual high-altitude test airdrops would be associated with the Proposed Action. Of this total, it is estimated that approximately 50 will be for heavy loads of 10,000 pounds or larger and approximately 100 will be for 2,000 pounds or less. This number of test events is consistent with historical use of R-2306B for airdrops planned under the Proposed Action (Stewart 2001). The aircraft involved in the airdrops would primarily be the C-130 transport plane (80 percent), with the remainder of the airlifts accomplished by C-141, C-17, and rotary wing aircraft.

Use of the DZ for proficiency training is anticipated to be approximately 20 sorties annually for personnel drops, including Special Operations missions involving personnel and equipment airdrops. Low-level airdrops would involve approximately 15 sorties annually. These utilization numbers are consistent with historical usage within the airspace (Stewart 2001).

### **2.2.3 Ground Operations**

Ground operations associated with airdrop activity consists of a DZ support team that ensures the target and surrounding areas are clear prior to every airdrop. In addition to safety

and recovery personnel, photography and test personnel usually travel to the area adjacent to the DZ during test events. Usually four Jeep-type vehicles would be part of the ground support team plus the recovery vehicle. Recovery vehicles for heavier airdrops would be a flatbed truck and an off-road crane for loading the dropped equipment onto the flatbed.

#### **2.2.4 Airspace Actions**

All airspace associated with the Proposed Action exists in restricted military airspace. Changes to this airspace are not required. If approved, the new location for a DZ may be charted on Federal Aviation Administration sectional airspace maps.



### 3.0 ALTERNATIVES

#### 3.1 ALTERNATIVES CONSIDERED

##### 3.1.1 Mohave DZ - Alternative A

Alternative A, presented and discussed in Chapter 2, is the government's preferred alternative to meet the requirements of the Proposed Action. This alternative is to establish the Mohave DZ in the north central Cibola Region.

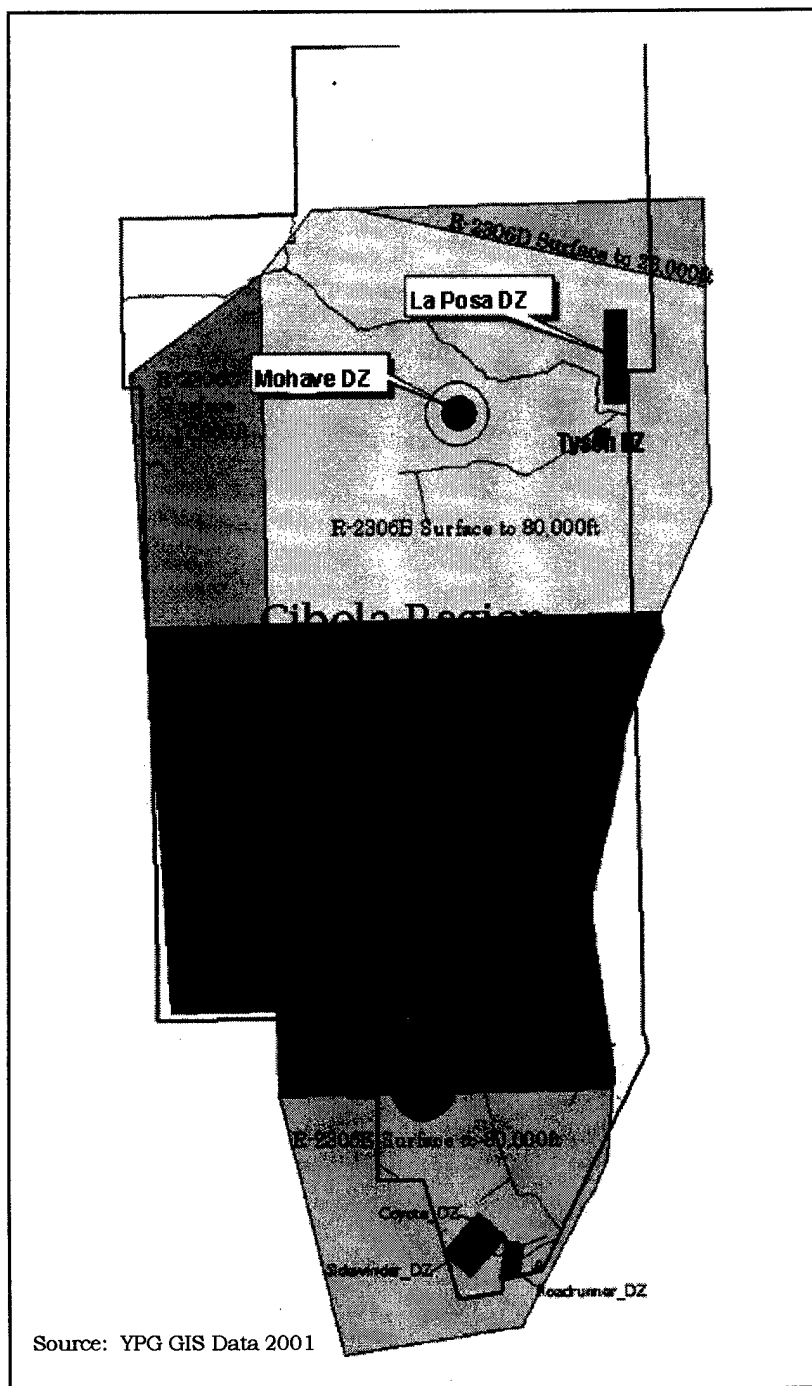
##### 3.1.2 Continued Use of La Posa DZ - Alternative B (No-Action Alternative)

The No-Action Alternative is presented as Alternative B and considers a scenario at YPG where high-altitude airdrops would continue to be delivered at the existing La Posa DZ. The estimated 150 sorties for high-altitude airdrops associated with the Proposed Action would use the La Posa DZ. Other sorties to the La Posa DZ for missions not related to the proposal would be unaffected.

No new DZ area would be designated and equipped specifically for high-altitude airdrop tests. Consequently, a remote location would not be available for airdrops of heavy loads from high-altitude and optimum data gathering instrumentation locations would not be established. The lack of this capability could result in the loss of opportunities to test and evaluate high-altitude airdrop equipment and related elements, as described under the Proposed Action. This alternative does not support the mission of YPG to provide premier facilities to its customers for developmental and operational testing.

La Posa DZ is located on the northeast boundary of the Cibola Region (see Figure 4). This DZ is close to U.S. Highway 95 and directly adjacent to the YPG boundary. Use of the La Posa DZ for high-altitude airdrops would continue to limit test activities because of the potential to miss the DZ due to unfavorable winds. The prevailing wind direction is toward the southeast, which is directly over property not under YPG control and this limits scheduling options for high-altitude airdrops. Recoveries of off-target airdrop loads that land on Bureau of Land Management (BLM) land require clearance from BLM. Data acquisition stations associated with tracking and monitoring high-altitude airdrops are not in optimal locations resulting in technical problems not associated with the proposed Mohave DZ.

Continuing to conduct high-altitude airdrop testing in a manner dictated by safety considerations associated with the drop locations available, air traffic conflicts, type of test, weather and wind conditions, altitudes of the drop, and weight of the cargo would compromise the ability of YPG to accomplish its mission. It may not be possible to conduct some high-altitude airdrops, while other high-altitude airdrops may occur at various locations on and off of YPG. This could require additional site-specific environmental documentation to be completed in order to accomplish the required airdrop tests.



**Figure 4. Lower Cibola and the CM-1 Areas**

### **3.2 ALTERNATIVES ELIMINATED FROM FURTHER DETAILED STUDY**

The following alternatives were examined for inclusion in the analysis as alternatives for the Proposed Action, but eliminated from further detailed studies.

#### **3.2.1 Lower Cibola Area**

The Lower Cibola area considered for a high-altitude DZ location is shown on Figure 4. Within this area are the existing Phillips DZ, Sidewinder DZ, and Roadrunner DZ. This location has the advantage of being flat and close to the Air Cargo Complex where test components are generated. The DZs in this area have been used before for parafoils and high-altitude drops. However, it is too close to facilities supporting other activities, which conflict with the offsets required for high-altitude. Thus, this potential alternative is eliminated from further detailed study.

#### **3.2.2 CM 1 Area**

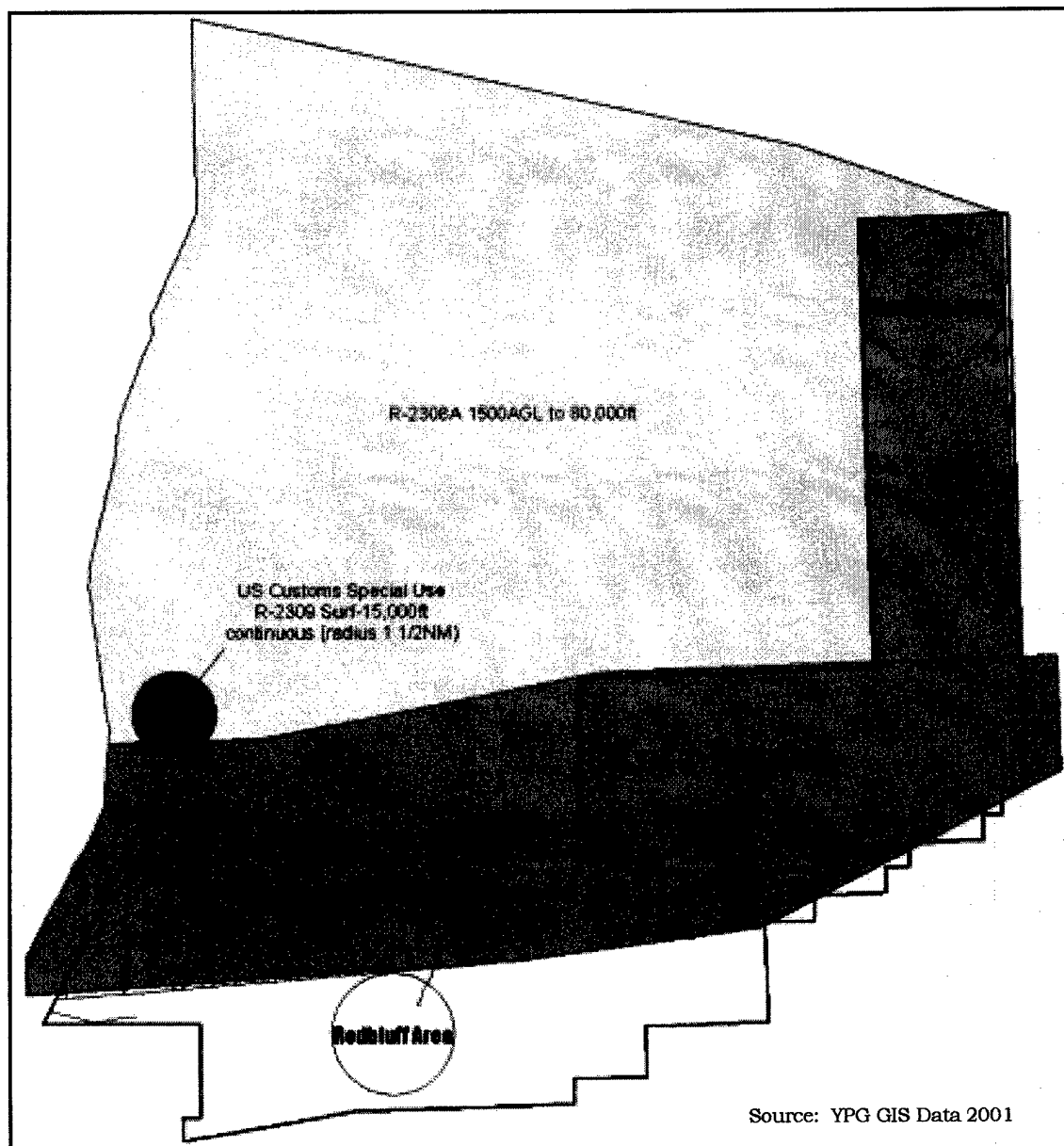
The CM 1 area was considered for development of a high-altitude DZ, as shown on Figure 4. The location has the advantage of being relatively close to the location where tests are generated and offices of test personnel. However, high-altitude airdrops have the potential for conflict with many buildings and other obstacles in the area. Thus, this potential alternative is eliminated from further detailed study.

#### **3.2.3 Red Bluff Area**

The Red Bluff area considered for a high-altitude DZ location has the advantage of being flat, as shown on Figure 5. However, it is too close to commercial air traffic routes to the south to allow the wind direction offsets required for high-altitude airdrops. In addition, as currently configured, R-2311 allows only 3,500 feet AGL of airspace. The location is also in a major firing range area and is approved for artillery firing only and is not approved for aircraft operations. Thus, this potential alternative is eliminated from further detailed study.

#### **3.2.4 East Arm Area**

The East Arm area considered for a high-altitude DZ location is shown on Figure 5. The location has the advantage of being flat and isolated. However, the area is closer to Kofa National Wildlife Refuge (KNWR) and high-altitude airdrops have a high probability of not landing on the drop zone. Airdrops landing in KNWR would require recovery by foot because driving off road in the refuge is not permitted. The area has poor infrastructure, the logistics of getting to and from the site would be resource intensive and would require significantly more road improvements than any of the other alternatives evaluated (or road access through the Kofa National Wildlife Refuge). Thus, this potential alternative is eliminated from further detailed study.



**Figure 5. Red Bluff and East Arm Areas**

## 4.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This chapter describes the existing environment associated with the study area for both alternatives considered for the high-altitude airdrop missions at YPG. The characterization of existing conditions provides a baseline for assessing the potential environmental impacts from the proposed activities.

YPG is located in the lower Sonoran Desert of southwestern Arizona, within Yuma and La Paz Counties. The topography is basin and range and varies in elevation from 46 to 853 meters above mean sea level. The climate is warm, extremely arid, with temperatures periodically exceeding 120°F and precipitation averaging 8.9 centimeters annually. There are no perennial lakes, streams, or mountain springs within YPG's boundaries. However, the Gila and Colorado Rivers are located in the proximity of YPG's southern and western boundaries, respectively. The City of Yuma is located 40 kilometers southwest of YPG and is the nearest population center (YPG 2001g).

The overall environmental setting for YPG is presented in detail in "Section Three - Affected Environment" of the *Final Range Wide Environmental Impact Statement, Yuma Proving Ground* (YPG 2001g).

### 4.1 LAND USE

#### 4.1.1 Installation Land Use

YPG encompasses 3,380 square kilometers of land. Land within the installation boundaries is composed of public and non-public lands withdrawn for use by the Department of the Army for military purposes (COE 1992b). Patented lands within the installation not currently leased consist of 1.66 square kilometers. The installation is configured in a "U" shape, extending 86.0 kilometers north to south and 86.9 kilometers east to west (COE 1992a; COE 1992b; YPG 2001g).

The majority of YPG's land is devoted to uses that are compatible with the current mission for the installation. Specific information regarding land use on YPG is available from U.S. Army Corps of Engineers (COE 1992a; COE 1992b). The installation is subdivided into five management components: the Cibola, Kofa, and Laguna Regions, airspace, and off-post locations (YPG 2001g). No off-post locations are involved in this EA. No proposed property acquisitions or land disposals are associated with this EA.

The Cibola Region comprises the western arm of YPG. The majority of the Cibola Region is classified as an Open/Operational Area. The Cibola Region was developed for, and is primarily used for, aircraft armament and air cargo testing. The North Cibola Region is used for static detonation conflagration testing of ammunition items, navigation systems testing, combat skills training, and aircraft armament systems testing. Much of this area remains in a primitive state with few maintained roads or permanent structures (COE 1992a; YPG 2001g). The northern portion of the Cibola Region is also a designated hunting area under the YPG hunting program. The middle segment of the Cibola Region includes the Mohave Wash area, where Alternative A is located (see Figure 6) and the western edge of the La Posa Plain, where Alternative B is located.

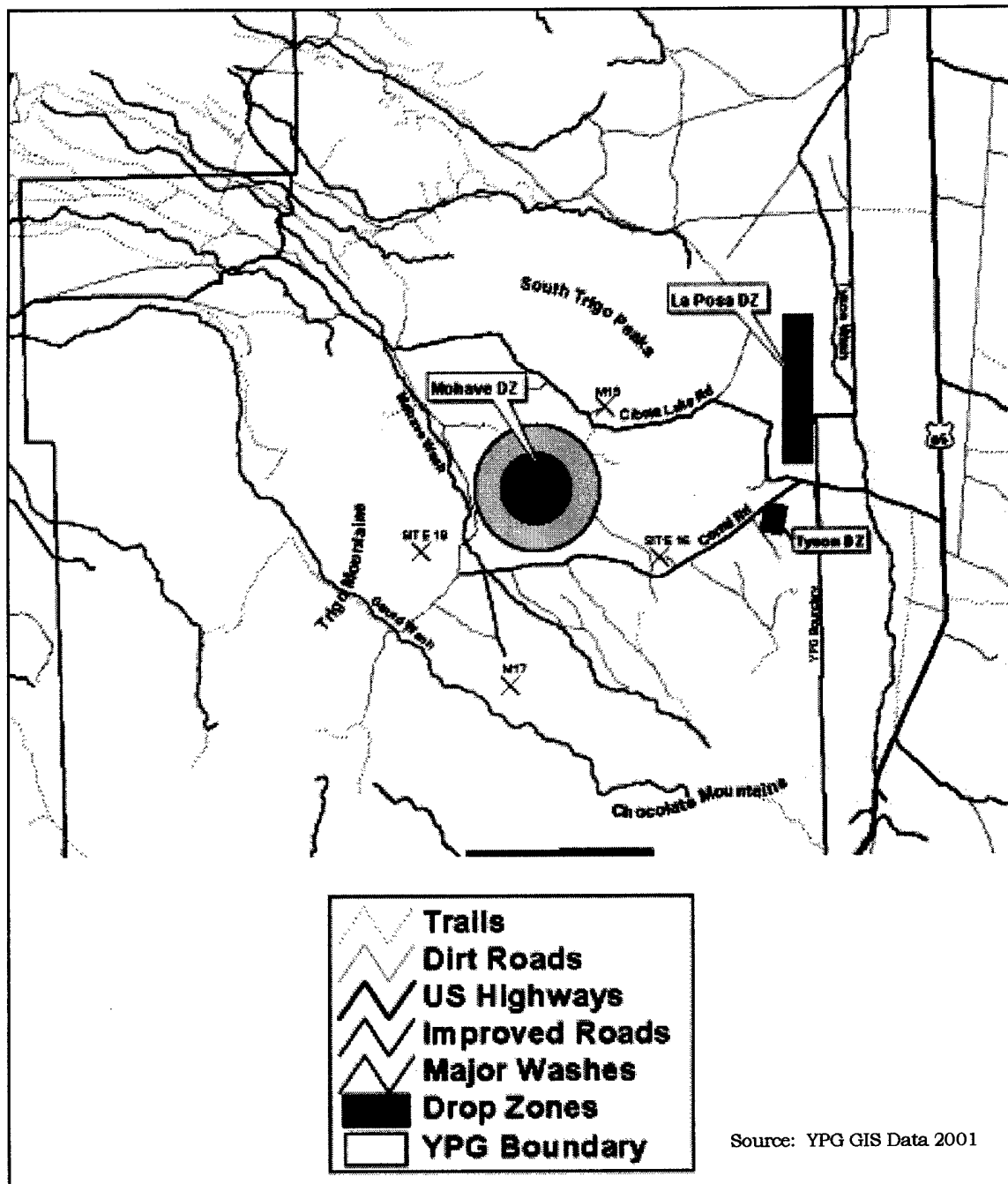


Figure 6. North Cibola Region

The Laguna Region south of the Cibola Region is the location of the main post area and encompasses most of the research and development facilities and service activities on the installation, including the Laguna Army Airfield (YPG 2001g). This airfield will serve as the origination point for most of the airdrop events considered under the Proposed Action.

The Kofa Region forms the southern and eastern boundary of YPG and encompasses the Kofa Firing Range (KFR) and the East Arm. The majority of the Kofa Region is classified as an Open/Operational Area. The KFR is a 64-kilometer long firing range for direct and indirect fire weapons. The firing front contains the primary firing positions, bunkers, and storage facilities for mission-oriented explosives used during testing of artillery weapons and ammunition.

#### **4.1.2 Adjacent Land Use**

Land bordering YPG is mostly federally owned and managed by Federal resource agencies. These areas include the Kofa, Cibola, and Imperial National Wildlife Refuges. Wilderness areas include locations within the Kofa National Wildlife Refuge and the Muggins and Trigo Mountains Wilderness Areas. Privately owned land in the Wellton-Mohawk Irrigation District extends along the southern edge of YPG within the Gila River floodplain and is utilized primarily for agriculture. The southern boundary of the Kofa Region is 2 miles from the town of Roll, Arizona. Quartzsite is the nearest town north of the Cibola Region, which is located in La Paz County. U.S. Highway 95 runs north to south adjacent to the Cibola Region and is the origination point for Cibola Lake Road, a public access road, which bisects the Cibola Region from east to west, as shown in Figure 5 (YPG 2001g).

### **4.2 SOIL RESOURCES**

Soil types, descriptions, properties, and qualities were determined by direct observations and comparisons to soil maps found in the *Soil Survey of the U. S. Army Yuma Proving Ground, Arizona-parts of LaPaz and Yuma Counties in 1991* (Cochran 1991).

Predominate soil types found within the Mohave Drop Zone are the Riverbend family-Carrizo family complex, and the Cristobal family-Gunsight family complex. These cobbly, sandy soils are characterized as containing many small to large stones resulting in high drainage patterns, and moderate to rapid permeability rates. The slopes of these soil complexes range from 1-3 percent resulting in occasional to rare flooding. There are small inclusions of well-drained, fan terraces of the Gunsight family-Chuchawalla family complex with 5-45 percent slopes and no flooding (Cochran 1991).

Gravelly, fine sandy, loam soils of the Gilman family-Harquua family-Glenbar family complex dominate the La Posa DZ area. These well-drained soil types have moderate, to moderately slow permeability ratings and have been described as "desert pavement." The slope of this soil complex has a range from 0-2 percent with rare flooding (Cochran 1991).

### **4.3 WATER RESOURCES**

#### **4.3.1 Surface Water**

No perennial streams are present at YPG (YPG 1997). In the Cibola Region, ephemeral stream channels (washes) drain the mountain ranges and foothills across broad alluvial fans (bajadas) and terraces. Major washes in the Cibola Region flow either to the north (Tyson

Wash), the northwest or west (Mohave, Crazy Woman, and Gould Washes) or south (Yuma Wash) (Cochran 1991).

Stream flow events in desert watersheds are typically generated by localized, high-intensity thunderstorms that result in rapid runoff and flash floods. Standing water may occur after rainfall-runoff events, but generally does not last long. A notable exception is runoff water trapped in deep bedrock depressions in mountain ravines, where it can persist for many months. These natural water holes, or "tinajas," are important supplemental water sources for wildlife. Several tinajas are known to occur in the Trigo Mountains on the west and north of the proposed Mohave DZ under Alternative A (YPG 1997).

The average annual rainfall at YPG is low (8.9 centimeters) and potential evapotranspiration is high (pan evaporation averages 272-centimeters per year). Consequently, upland soils tend to be dry much of the time and support only sparse stands of vegetation, if any. However, during occasional rainfall-runoff events, overland flow will concentrate in microchannels and washes, enhancing soil moisture recharge along the watercourse. The extra soil moisture creates a "xeroriparian" zone in and along the channel where plant biomass and species diversity are greater than the adjacent runoff surfaces (YPG 2001g).

The Cibola Region study area for this EA includes two separate areas: the La Posa Plain area and the Mojave Wash area. The western portion of La Posa Plain, which is the location of the existing La Posa DZ, includes a portion of the South Trigo Peaks that drain eastward onto the La Posa Plain. The washes in this area tend to be shallow and laterally mobile. The soil moisture here is sufficient to support large saguaros, ironwoods, and paloverdes. Tyson's Wash, which flows north and is located on the east side of the La Posa DZ, is habitat for many of the wildlife species found in the creosote-white bursage association throughout YPG. This wash receives runoff from the Kofa and Castle Dome Mountains, is heavily vegetated, and has well cut steep banks. A manmade wildlife water development, located in the Trigo Mountains several kilometers from the western edge of the La Posa DZ, is the only known permanent water source close to the study area for Alternative B.

The Mohave Wash, just to the west of the proposed Mohave DZ under Alternative A, consists of a large broad wash system flowing northwest, receiving runoff from the Chocolate and Trigo Mountains. The Mohave tank located just west of Mohave wash and the Chocolate Mountains catchment #1 located southeast of Alternative A, are the closest known water holes near the study area for Alternative A.

The Cibola Region has washes considered to be "waters of the United States," which are regulated under Section 404 of the Clean Water Act. Any dredging or filling of these washes may require a permit from the COE (COE 1987; YPG 1997).

#### 4.3.2 Groundwater

No wells are located in the vicinity of either alternative. Depth to water tables at YPG are generally very deep, and infiltration rates low, resulting in reduced potential for contamination of groundwater by leachate or spilled substances is unlikely to be found with existing groundwater resources (COE 1987). In example, the static water level of the well nearest the proposed Mohave DZ (Well M) was recorded as 638 ft in December 2000. Bottled water is used for drinking water at the installation. The only source of potable water, for drinking, is at the main post.



#### 4.4 BIOLOGIC RESOURCES

Detailed information on biological resources found throughout YPG is available from the *Integrated Natural Resources Management Plan* (YPG 1997) and the *Final Range Wide Environmental Impact Statement* (YPG 2001g).

##### 4.4.1 Vegetation

Typical vegetation throughout the installation reflects the extreme aridity of the region. Detailed information on plant communities can be found in the *Final Range Wide Environmental Impact Statement* (YPG 2001g), as well as the *Integrated Natural Resources Management Plan* (YPG 1997), the *Yuma Proving Ground Perennial Plant List* (YPG 2001c), and the *Yuma Proving Ground Annual Wildflowers Plant List* (YPG 2001d).

The proposed Mohave DZ area, Alternative A, falls within the central portion of the Cibola Region of YPG. Surrounded by gentle sloping bajadas or plains, covered with desert shrub and drought-tolerant underbrush, Alternative A reflects the topography and vegetation characteristic of the region. Traversed by several washes, the area is comprised of desert pavement and flat broad fan terraces. Trees commonly found within the larger desert washes are blue paloverde, ironwood, and catclaw acacia, as well as understory shrubbery consisting of creosote bush, white bursage, and wolfberry (Bern 1995). Loose silty soils, characteristic of the smaller washes within the Alternative A area, support vegetative compositions of brittlebush, white ratany, and Mormon tea. More creosote bush, white bursage and individual stands of some forbs and grasses occur within this same terrain. Cacti such as beavertail, saguaro, hedgehog, buckhorn cholla, teddy bear cholla, and diamond cholla, can be found within the areas surrounding these smaller washes (Bern 1995). A rare species, the night blooming cereus, is also known to inhabit this area (Northland Research Inc., 2000).

The western edge of La Posa Plain is the study area for Alternative B and includes the existing La Posa DZ. Dominant vegetation for this area contains plant associations of foothill paloverde-ironwood and creosote-white bursage along with some forbs and grasses (YPG 1997). Sandy soil formations located within La Posa Plain support big galleta grass plant communities (YPG 2001g). Other species found at this site are mesquite, catclaw, buckhorn cholla, wolfberry, big bursage, crucifixion thorn, and white thorn (YPG 1997). In the northern portion of La Posa DZ vegetation is short and pencil cholla is abundant (Bern 1995).

##### 4.4.2 Wildlife

Wildlife on the installation consists of species that have adapted to the harsh and specialized habitat conditions of the Sonoran Desert, along with a few introduced species such as wild horses and burros (YPG 1997). Detailed information on wildlife found throughout YPG is available from the *Integrated Natural Resources Management Plan* (1997) and surveys done on YPG by the AGFD (Ough and deVos 1986; deVos and Ough 1986). A complete listing of mammals, birds and reptiles of the area is available from the *Yuma Proving Ground Mammal List* (YPG 2001a), the *Yuma Proving Ground Bird List* (YPG 2001e), and the *Yuma Proving Ground Reptile and Amphibian List* (YPG 2001b).

Seasons as well as the availability of habitat within the Mohave DZ, Alternative A, will dictate species quantity and composition. There are two water sources within the proximity of the proposed area that encourage the presence of wildlife. Mohave tanks is a natural waterhole is located about 4-km west of the buffer zone. A wildlife water development is located about 5-km southeast of the buffer zone (YPG 1997). Various desert washes within the area provide

good migration corridors for mule deer during the spring and fall seasons. A variety of broad-ranging, habitat generalists that could frequent the area are wild horses and burro, coyote, bobcat, badger, kit fox, gray fox, desert cottontail, and jackrabbit. Other habitats found within the location support a wide range of reptiles such as the desert tortoise, desert iguana, zebra-tailed lizard, tree lizard, desert horned lizard, western whiptail (lizard), common king snake, western shovel-nosed snake, western diamondback rattlesnake, and sidewinder (Ough and deVos 1986). A variety of native and migratory birds have been recorded breeding in the general vicinity. These species include: Gambel's quail, white-winged dove, mourning dove, greater roadrunner, western screech-owl, great horned owl, lesser nighthawk, black-chinned hummingbird, Costa's hummingbird, Gila woodpecker, ladder-back woodpecker, Say's phoebe, ash-throated flycatcher, western kingbird, verdin, rock wren, black-tailed gnatcatcher, northern mockingbird, phainopepla, loggerhead shrike, European starling, Lucy's warbler, black-throated sparrow, and the house finch (AGFD 2000). Wider ranging birds that may frequent the area are the red-tailed hawk, American kestrels, turkey vultures and the common raven (Ough and deVos 1986). Found less frequently within the proposed area, are bats, which inhabit abandoned mines and caves of the surrounding mountains (YPG 1997).

Similarity of habitat and vegetation between the two locations, Alternatives A and B, does allow for some overlap regarding species presence and composition. Mammalian wildlife found within Alternative B are similar to those found within Alternative A, as well as several common species of birds, and reptiles. A noteworthy exception to this area is Tyson Wash, which runs perpendicular to the eastern edge of the La Posa DZ. These types of washes provide corridors that large mammals commonly utilize (YPG 1997).

#### 4.4.3 Sensitive Species

Analysis for this EA addressed sensitive species, including Federal and State listed endangered species. Currently, no threatened or endangered species occur in either study area.

The Arizona Game and Fish Department's Heritage Data Management System was accessed and indicated that two special status species have been documented as occurring in the vicinity of both Alternative A and B. These species, the California leaf-nosed bat and the Sonoran desert tortoise, have been classified as wildlife of special concern in Arizona (AGFD 2001a).

Wild horses and burros are protected and managed under the Wild and Free-Roaming Horse and Burro Act of 1971. Wild burros are known to inhabit the Mohave DZ, Alternative A location, and are found within the La Posa DZ, Alternative B area. The Arizona Native Plant Law has identified several species of cactus, including the saguaro, for protection (YPG 1997). The Sonoran pronghorn, a species of antelope listed as a Federal threatened and endangered species has part of its historic home range on YPG. Lucy's warbler, a common breeding bird on YPG is on the priority listing of all breeding birds in Arizona, and the desert night blooming cereus is another species of interest to YPG (Northland Research Inc. 2000).

#### 4.5 CULTURAL RESOURCES

Cultural resources are defined by the National Historic Preservation Act as prehistoric and historic sites, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. Depending on the condition and historic use, such resources

may provide insight into living conditions of previous cultures and/or may retain cultural significance to modern groups.

#### 4.5.1 Archaeology

A survey for cultural resources in the study area for Alternative A was conducted in conjunction with this EA (Northland Research, Inc. 2000).

During the survey, 41 archaeological sites were either recorded for the first time or re-recorded. Arizona State Museum (ASM) site definitions and criteria were used during this survey. One site has been determined to be potentially eligible for inclusion to the National Register of Historic Places (NRHP) on the basis of an earlier survey (Bentley 1996). Of the other 40 sites, 13 are recommended as eligible for the NRHP, and 27 are recommended as potentially eligible for the NRHP.

In addition to the sites isolated occurrences (IOs) were recorded. IOs consist of isolated and small clusters of artifacts and isolated features, which do not meet the ASM definitions and criteria for sites. None of the IOs are recommended as eligible for inclusion to the NRHP.

The majority of cultural resources identified in the La Posa DZ area are confined to the surface (Gauna 2001). No habitation sites and/or cultural features were identified. None of the cultural resources (several prehistoric grinding stations and a small number of isolated prehistoric artifact locations) are considered to be National Register eligible. This is based upon the lack of subsurface cultural evidence, lack of diagnostic artifacts, and the small quantity/diversity of cultural remains (Mooney 1988 and Ashworth 1991).

For a detailed discussion of the prehistoric and historic culture of YPG, reference the *Integrated Cultural Resources Management Plan*, July 2000 (YPG 2000c).

#### 4.5.2 Native American Cultural Concerns

Native American groups have historically been present in the YPG area. There are currently three Native American reservations located within the vicinity of YPG. These are the Colorado River Indian Tribes Reservation, the Fort Yuma Indian Reservation, and the Cocopah Indian Reservation.

#### 4.6 AIR QUALITY

Air quality in a given location is described by measuring concentrations of certain pollutants in the atmosphere. The type and amount of pollutants emitted determine pollutant concentrations, the size and topography of the air basin, and meteorological conditions related to the prevailing climate. The significance of a pollutant concentration is determined by comparison with Federal and local standards.

No ambient air quality data is known to exist for Alternatives A and B; however, the site for alternative B is adjacent to vehicular traffic on U.S. Highway 95 and may be slightly effected by vehicle emissions and dust generated during load landings and retrieval operations. However, there should be no long-term air pollution problems at either area since there are only minor sources of air pollution, and there should be good air pollution dispersion produced by strong winds and a lack of topographic features to inhibit dispersion. The only known sources of air pollution in these areas are from dust that is generated by wheeled and tracked vehicles operating on unpaved roads. Dust can also be generated by ordnance landing in

impact areas (YPG 2001g). The locations for Alternatives A and B are not in a PM<sub>10</sub> non-attainment area, nor will emissions from the Proposed Action result in an increase in other criteria air pollutants.

#### 4.7 NOISE

Noise is usually defined as sound that is undesirable because it interferes with speech communication and hearing, is intense enough to damage hearing, or is otherwise annoying. Noise may be intermittent or continuous, steady or impulsive.

##### 4.7.1 Noise Environment

The land surrounding YPG is undeveloped and sparsely populated (COE 1992a). The main sources of noise on YPG come from transportation and weapons firing activities in the Cibola and Kofa Regions. At YPG, ambient noise (baseline noise when installation activities are not in operation) is associated with helicopter overflights from MCAS-Yuma and AGFD wildlife surveys, military aircraft flying overhead, commercial air traffic, and automobile traffic on U.S. Highway 95 (YPG 2001g).

The day-night level (DNL) metric is the primary descriptor for noise. The DNL is the time weighted energy average sound level, with a 10-decibel (dB) penalty added for nighttime noise events. The annual average is used for all activities. Noise from transportation sources, such as vehicles and aircraft, and from continuous sources, such as generators, are assessed using the A-weighted DNL (ADNL). Impulse noise resulting from armor, artillery, and demolition activities are assessed in terms of the C-weighted DNL (CDNL). Noise from small arms ranges are assessed using the peak unweighted sound level (USA 1997).

Noise contour maps are prepared as part of the Environmental Noise Management Program (ENMP). The maps delineate three different noise zones, which are based on the expected percentage of the population that would be annoyed by noise at a particular dB level from various sources (Table 4-1).

**TABLE 4-1. NOISE LEVELS**

Noise Zone	Population Highly Annoyed	Transportation Noise (ADNL)	Small Arms Noise (ADNL)	Impulse Noise (CDNL)
Zone I	<15%	<65 dBA	<62 dBC	<87 dBP
Zone II	15% - 39%	65-75 dBA	62-70 dBC	87-104 dBP
Zone III	>39%	>75 dBA	>70 dBC	>104 dBP

Source: USA 1997.

The existing noise contour maps for YPG show that with the exception of one small area at a remote portion of the Kofa National Wildlife Refuge, all Zone II and III contours are contained well within the bounds of the installation. The one small area referred to above has been covered by a Letter of Permit from the Department of the Interior (YPG 1987).

The Cibola Region does not have administrative facilities where permanent personnel are stationed. Any personnel in this area are involved in testing and training activities. No permanent human receptors are identified in the Cibola Region (YPG 2001g). Currently, there

is no artillery firing conducted in this area so noise levels are relatively low. No noise studies have been performed in the Cibola Region.

#### 4.7.2 Noise Abatement and Complaints

In accordance with Army Regulation (AR) 200-1 Environmental Protection and Enhancement, YPG maintains a Noise Complaint Management Program. Records are maintained and procedures are implemented for handling noise complaints received from the public due to military activities operating from YPG (USA 1997; YPG 1991). To reduce noise impacts, the Army has established the ENMP. During the past 10 years, only two noise complaints have been received for aircraft operations at YPG landing at Laguna Army Airfield. Approach patterns were studied and adjusted to mitigate the noise level at the receptor (Sorensen 2001).

### 4.8 SOCIOECONOMIC SETTING

Socioeconomic resources involve the basic attributes and resources associated with the activities of humans, particularly population characteristics and economic assets and activity. Economic activity typically encompasses employment, personal income, and industrial trends and growth. Impacts on population and/or economic activity can also influence other components, such as housing availability and public services provision.

#### 4.8.1 Demographic Setting

When La Paz County was formed from northern Yuma County in 1983, YPG became centered in both counties. The City of Yuma is the largest urban center in the region. In 2000, the population of Yuma County was 160,026. The population of the Yuma Planning Area was predicted to grow by as much as 58 percent over a 20-year planning period (1995 to 2015) (see Table 4-2) and should continue to accommodate large numbers of winter visitors (Yuma 1996).

**TABLE 4-2. REGIONAL POPULATION PROJECTIONS**

	1995	2000	2005	2010	2015
<b>Arizona</b>	4,134,894	4,632,818	5,132,727	5,652,569	NA
<b>Yuma County</b>	123,100	140,000	157,000	175,600	195,500
<b>Yuma</b>	60,698	67,189	74,898	80,154	87,146

Source: Yuma 1996

#### 4.8.2 Local Economy and Employment

Economic growth in Yuma County is largely dependent upon three activities: agriculture, tourism, and government employment (Yuma 1996). YPG is Yuma County's largest single employer of civilians and is one of the largest consumers of goods and services of all the government organizations in the county. The combined military and civilian payroll in Fiscal Year 2000 was \$42.7 million with an additional \$70.7 million going to contractual services. Construction and operations programs totaled \$29.7 million. Thirty-six percent of all YPG purchases greater than \$2,500 were made from Arizona businesses and 25-percent were made

at Yuma County businesses. Fifty percent of government credit card purchases, under \$2,500, are made within the Yuma community (YPG 2001e).

#### 4.8.3 Environmental Justice

Executive Order 12898 - *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs Federal agencies to address environmental and human health conditions in minority and low-income communities.

Based upon the 2000 census, there are 160,026 individuals residing in Yuma County, represented by all races, over 50-percent of the population claimed Hispanic or Latino heritage. There are three Native American Indian Reservations along the Lower Colorado River in the vicinity of Yuma and Parker, Arizona, the Cocopah Indian Reservation, Fort Yuma Indian Reservation, and the Colorado River Indian Tribes Reservation (YPG 2001g).

Population levels and their associated income groups fluctuate in Yuma County on a seasonal basis. The Yuma area had 89,000 winter visitors in 1998. Many of these were seasonal recreational visitors, or "snowbirds," while others were seasonal agricultural workers. The median family income in Yuma in 2000 was \$27,227 (US Census 2000).

#### 4.9 HEALTH AND SAFETY

The occupational and public health and safety impacts associated with an action address both potentially affected workers and the general public. Impacts to workers are common to industrial and construction settings and excavation operations. Such impacts can include specific job related safety issues, fugitive dust, or other types of occupational exposures.

Health and safety risks are inherent to the mission, terrain, and climate at YPG (YPG 2001g). Safety fans and buffer zones are established for specific missions using modeling methods. The health and safety of workers and the public is overseen and managed by the YPG Safety Division. Emergency medical facilities at YPG are limited to an outpatient medical clinic. Routine procedures such as x-rays and laboratory work can be performed at the clinic by onsite staff. Transport time to the clinic ranges from 15 to 60 minutes. Serious injuries or illness can be treated in the City of Yuma at the regional medical center. Helicopters from MCAS-Yuma and Luke Air Force Base are available for emergency transportation. Fire protection at YPG is provided by fire stations at Laguna Army Airfield, Kofa Firing Range, and a secondary station in the Main Administrative Area. Emergency services on or near YPG are limited. Emergency personnel in the Yuma area include over 120 police officers, Yuma County sheriff's deputies, and firefighters (USA 1993). The YPG Police Services Branch provides law enforcement personnel and security services on YPG.

There has been no unexploded ordnance (UXO) identified within the study area for either alternative. However, UXO has previously been found near Site 16, which is adjacent to the proposed Mohave DZ area (Swinford 2001).

The public is prohibited from trespassing onto firing and maneuver ranges. Warning signs are posted in appropriate locations throughout the installation. Before access to a range is granted, safety briefings are conducted. Scarcity of water, extreme heat, abandoned mines, dangerous wildlife (e.g., rattlesnakes, Africanized honey bees, and scorpions), and unexploded ordnance (UXO) are potentially life-threatening issues to members of the general public, as well as to YPG personnel. In the Cibola Region, where Alternatives A and B are located, U.S. Highway 95 runs north to south adjacent to the eastern boundary of the region. Cibola Lake Road, a public access road, bisects the Cibola Region south of the Alternative B and north of

Alternative A. These roads and other access roads to YPG are well marked with warning signs (YPG 2001g).

#### 4.10 TRANSPORTATION, UTILITIES, AND INFRASTRUCTURE

Analyses of impacts associated with transportation, utilities, infrastructure, and services focus on roads and traffic patterns, water and power sources and supply capability, and the availability of public services. Such analyses can include traffic volume and types of vehicles, electric power use, fossil-fuel consumption, construction materials consumption, and also demand for emergency site services such as medical support, fire protection, and law enforcement.

The road network at YPG includes highways, primary and secondary roads, and tertiary and rural roads (COE 1992a). Access to the study areas for both Alternatives A and B in the Cibola Region is via U. S. Highway 95, a two-lane road that is the principle high-speed traffic access route to YPG. It runs north to south from the US-Mexico border through the City of Yuma and the town of Quartzsite. There is an extensive network of primitive dirt roads and jeep trails throughout La Posa Plain and into the Mohave Wash area. Cibola Lake Road is a public access road that bisects the Cibola Region. Corral Road is an improved gravel road providing access for test personnel from Cibola Lake Road to the mission areas within the Mohave basin. There are no improved dirt roads south of Corral Road. However, there is an extensive network of jeep trails throughout the area both north and south of Corral Road. There are no established roads into the Mohave Wash area other than Corral Road although wash bottoms are generally traversible.

There are a number of designated DZs in the Cibola Region that are primarily used for high explosives and inert rounds. The three existing DZs within or near the study area, (Tyson, Corral, and La Posa) are used for personnel, equipment, and ammunition airdrops. A dirt runway used for C-17 aircraft is located south of Corral Road (YPG 2001g).

A 12-kilovolt electrical power line parallels Cibola Lake Road in the Cibola Region to the intersection of Corral Road south of the La Posa DZ. South of Corral Road, there are no electrical connections currently available. In the Cibola Region, there are no phone lines available for either alternative. Communication is accomplished with range radios and cell phones.

No permanent buildings in the North Cibola Region are located in the vicinity of Alternatives A and B (YPG 2000b).

#### 4.11 AESTHETIC

Aesthetics generally involve visual resources, which are defined as the natural and man-made features that give a particular area its aesthetic quality. These features form the overall impression that an observer receives of an area or its landscape character. Topography, landforms, vegetation, bodies of water, manmade features, and the degree of panoramic view available are considered characteristics of an area if they are inherent to the structure and function of the landscape. Landscape character is studied to determine whether changes in visual character could occur and whether such potential changes are compatible with an affected setting or would noticeably contrast with it. The significance of a change in visual character is influenced by social considerations, including public value placed on the resource, public awareness of the area, and general community concern for the viewscape associated with an area.

YPG is located in an area characterized by rugged mountains, broad alluvial plains, and sparse desert vegetation.

Areas of aesthetic or visual value within the Alternative A study area include White's Peak in the Chocolate Mountains south of Mohave DZ, and Mohave Peak southwest of Mohave DZ. Areas of aesthetic or visual value within Alternative B study area include the Kofa Mountains, which dominate the viewscape to the east of La Posa DZ and Cunningham Mountain to the north. The Kofa National Wildlife Refuge (KNWR) is also located immediately east of the La Posa DZ. The KNWR has some areas designated as wilderness for scenic and habitat purposes.



## **5.0 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES**

This chapter assesses potential environmental consequences associated with direct and indirect effects of each alternative. Potential Impacts are addressed in the context of the scope of the Proposed Action in Chapter 2.0 and in consideration of the potentially affected environment as characterized in Chapter 4.0.

### **5.1 EFFECTS COMMON TO ALL ALTERNATIVES**

For the following resource areas: water, air quality, noise, socioeconomics, and hazardous materials and waste, the effects of both alternatives are essentially the same and are presented in section 5.1.1. through 5.1.5, respectively. This section has been included to eliminate repetitive text under each alternative later in the chapter

#### **5.1.1 Water Resources**

Impacts to water resources are considered significant if one or more of the following significance criteria are met: 1) surface water is contaminated by stormwater runoff to levels above Federal or state water quality standards; 2) "Waters of the U.S." are degraded by actions that exceed limits authorized under the Clean Water Act; 3) groundwater is depleted to the degree that subsidence causes fissures to form; 4) groundwater quality is degraded below Clean Water Act standards.

##### **5.1.1.1 Effects Common to Both Alternatives**

Surface water resources may be impacted by changes in the soil surface, plant cover, or the natural drainage system. Soil surfaces that lose their protective rock and vegetative cover alter hydrologic processes and may result in accelerated erosion. This can lead to higher sediment yields entering the drainage system, causing siltation and increased flooding.

Under either alternative, no use will be made of groundwater resources and no impact to the resource is anticipated. Consequently, neither alternative will have any impact on drinking water resources. There will be no significant pollution of surface water flows resulting from this action. Activities associated with either alternative will not change the amount of localized soil erosion resulting from airdrop retrieval operations if proper erosion and surface-control measures are implemented. Required road construction will be accomplished by following natural landforms and avoiding crosscutting drainage areas, whenever possible.

##### **5.1.1.2 Mitigation**

Any unforeseen adverse impacts to surface water resulting from either of the alternatives will be mitigated by application of established land management practices (YPG 1997). No other water resources mitigation is required.

### 5.1.2 Air Quality

Due to the activities conducted at YPG, regulated air pollutants are not normally an issue. Impacts to air quality are considered significant if an action exceeds emission limits established under the Clean Air Act of 1970.

#### 5.1.2.1 Installation Ambient Air Quality

Under both alternatives, there will be short-duration increases in air pollution from dust generated by recovery vehicle traffic along dirt roads and across the desert. Dust emissions can vary substantially on a daily basis depending on levels of vehicular activity and size of retrieval equipment, specific operations, and the prevailing meteorological conditions. However, since neither of the alternatives is in a PM<sub>10</sub> non-attainment area, this should not represent an air quality problem. Airdrop recovery operations would be essentially identical regardless of which location an airdrop were delivered, as the distance from the center of the DZ to the actual landing and retrieval point would be independent of the DZ utilized and completely a function of the performance of the delivery system.

The majority of dust generated during construction activities would result from soil grading activities for the instrumentation pads, and for Alternative A, to flatten and widen the access road from Corral Road toward Mohave Wash and the center of the proposed Mohave Wash. Standard control measures (i.e. pre-watering surfaces to be graded) are used to minimize dust emissions during construction and road maintenance activities.

There would also be minor localized air pollution emissions on YPG due to combustion emissions from vehicles used to observe the airdrop and to retrieve the payloads. However, since only minor localized exhaust emissions are expected to occur, and these would not represent an increase in emissions because airdrops are now being conducted in the general area, no impacts to air quality are anticipated.

#### 5.1.2.2 Mitigation

Increased dust emissions resulting from the proposed construction activities would be short-term adverse impacts that could be mitigated through standard dust minimization practices, such as regularly watering exposed soils and soil stabilization. Due to engineering controls and regular maintenance of access roads, limited dust could occur regardless of the alternative chosen. Implementation of a mitigation and monitoring plan utilizing air quality monitors would ensure PM<sub>10</sub> emissions stay below State mandated levels and that dust generated as a result of DZ activities does not migrate off the installation.

### 5.1.3 Noise

Impacts are considered significant if the following criteria are met: 1) noise levels allowed in the Installation Compatible Use Zone (ICUZ) as described in Army Regulation (AR) 200-1, 7-5 are violated; 2) Noise levels at testing areas exceed DoD standards that establishes acoustical limits as described in AR 40-5 and associated noise level compatibility guidelines.

#### 5.1.3.1 Effects Common to Both Alternatives

Implementation of either alternative would have only minor effects on the noise environment in the vicinity of the DZ during construction activities. Use of heavy equipment

for site preparation and development (e.g., earth removal, grading, and backfill) would generate noise exposures above typical ambient levels in this area. However, noise generation would be typical of construction activities, would only last the duration of construction activities, and would not exceed noise level thresholds established under the Environmental Noise Management Program.

Aircraft operations already occur in the Restricted Area R-2306B that controls airspace use above the locations associated with both of the alternatives. Of the 2,307 sorties flown annually in R-2306B during FY 2000, approximately 150 were associated with high-altitude test airdrops (Sorensen 2001). This annual total is not expected to change under either alternative, therefore, noise from aircraft operations would not change. In addition, the high-altitude nature of these airdrops reduces noise levels on the ground from aircraft operations to negligible levels.

Airdrop activities would have only minor localized effects on the noise environment on the ground in the vicinity of the DZ under either alternative. Such noise would not extend beyond the installation boundaries and is compatible with current land use. There would be no significant impact on sensitive noise receptors. There will be no additional noise, beyond that of ambient levels, upon completion of activities associated with an airdrop and recovery test mission.

#### **5.1.3.2 Mitigation**

No mitigation is necessary for any of the alternatives. Any mitigation that would be required could be accomplished through restriction of construction activity to normal working hours. Personal protective equipment commonly used during construction would protect personnel from adverse noise effects.

#### **5.1.4 Socioeconomics**

The significance of potential impacts on socioeconomic resources addresses effects on population and expenditures and is assessed in terms of their direct effects on the local economy and related effects on other socioeconomic resources (e.g., jobs, housing). The magnitude of potential impacts can vary greatly depending on the location of a proposed action. For example, an action that creates 20 jobs in an urban area may be unnoticed but one that creates 20 jobs in a rural region may be a significant contribution to the local economy.

Impacts to socioeconomics are considered significant if one or more of the following conditions are met: 1) implementation of the alternative results in substantial changes in the number of employees, due to growth, that would overload the public services such as schools and would increase the demand for housing beyond what is presently available, 2) implementation of the alternative results in changes in the number of employees, due to downsizing, that would leave the present public services with funding problems, under utilization, and create excess housing.

##### **5.1.4.1 Local Economy and Employment**

Under implementation of either action alternative, there may be some small short-term benefits to the local economy during construction activities at the installation due to the purchase of materials. However, because of the small scale of the effort, the local community probably will not notice the additional expenditure at YPG. Implementation of either

alternative would not result in any measurable change in the local economy or any changes in the number of employees on the installation.

#### **5.1.4.2 Environmental Justice**

The amount of potential construction related to the utilization of either alternative is fairly limited and takes place completely within the YPG boundaries. The minority and low-income population surrounding YPG is geographically removed from the area affected by the proposal. Due to these factors, the minority and low-income populations in the area surrounding YPG would not be disproportionately affected by impacts resulting from the implementation of either action alternative.

#### **5.1.4.3 Mitigation**

No mitigation is required for either alternative.

### **5.2 LAND USE**

The significance of potential impacts on land use is based on the level of sensitivity of an area affected by the proposal. Impacts to land use are considered significant if land is degraded so it cannot be used for current or planned use; and/or planned uses conflict with off-post land use, especially along the YPG boundary.

#### **5.2.1 Mohave DZ - Alternative A**

Implementation of this alternative would result in the Mohave DZ being developed in the Cibola Region. The Cibola Region is used for static detonation, conflagration testing of ammunition items, navigation systems testing, combat skills training, and aircraft armament systems testing (COE 1992a). Other DZs are currently used in the Cibola Region, including the La Posa DZ, Robby DZ, Tyson DZ, and Corral DZ. The activities associated with the establishment of the Mohave DZ would be consistent with this type of use. The construction projects associated with this alternative would include the development of four instrumentation pads to provide TSPI data associated with airdrops. Existing concrete pad areas (16 feet X 20 feet) would be utilized at Sites 16 and 18. New concrete pads would need to be constructed at Sites M17 and M19. A Contraves Mount would be placed on a concrete pad to house a Digital Video Theodolite at each location. One transportable office/shelter will be placed to the east of the DZ, outside of the buffer zone and up on high ground, to act as an observation and visitor control point. No construction of buildings or other structures would be required within the 3-km target area or the 2-km buffer zone of the DZ.

Some grading would be required to flatten and widen the existing unnamed dirt road that starts from Corral Road south of Site 16 and runs to the west-north-west, allowing access to the DZ and to the observation shelter. This would involve grading to increase the width of the route from 12 feet to 16 feet. One additional access route through the wash at the southwest corner of the DZ is also to be provided for those loads landing toward the western side of the DZ. This route will only open access across the wash and will not proceed any further. No access to the DZ area is to be provided from Cibola Lake Road.

Traffic along Cibola Lake Road may have to be suspended during airdrop events and could potentially affect traffic on U.S. Highway 95, however the impact would be of short duration. The designated hunting area in the North Cibola Region would not likely be effected by airdrop events. Vehicle traffic in other areas of YPG would not be affected by either

construction activities or operations and retrieval activities at the proposed Mohave DZ location.

### **5.2.2 Continued Use of La Posa DZ - Alternative B (No-Action)**

Implementation of Alternative B would result in the continued use of the La Posa DZ. High-altitude airdrops would continue to occur and there would be no change to land use on or off YPG and impacts to this resource would remain unchanged.

### **5.2.3 Mitigation**

No mitigation for land use as a military testing area is necessary for Alternatives A or B since the Proposed Action supports the intended mission for lands associated with YPG. YPG security personnel would have to close Cibola Lake Road or U.S. Highway 95 during airdrop events for Alternatives A and B, respectively; as well as ensuring all unauthorized personnel were removed from the DZ area prior to any testing.

## **5.3 SOIL RESOURCES**

The protection of unique geologic features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating impacts of a proposed action on geologic resources.

Impacts to soil resources are considered significant if: 1) soil subsidence occurs over large areas; 2) activities result in soil erosion exceeding established tolerances; 3) permanent contamination of soil occurs that would restrict future land use.

### **5.3.1 Mohave DZ - Alternative A**

The Proposed Action would not cause significant impacts to regional or local topography features, produce soil erosion, or permanent contamination of soils that would restrict future land use at YPG. Soils at proposed area have been previously disturbed by off-road traffic and are not in a pristine state. Examples of these types of disturbances to surface crusts and desert pavement can be seen throughout most of YPG valley areas (Cochran 1991, YPG 2001g). Soil erosion due past activities and the proposed action, is not expected to exceed established tolerances. Healthy plant communities indicate health soil conditions (YPG 1997). Soil contamination should not result from proposed activities.

Disturbance to soils will occur at construction locations associated with the two new instrumentation locations and as a result of the widening and grading of existing road surfaces and new road construction. Such road construction will result in the removal of some vegetation, grading and leveling, and some terrace surfaces and washes being cut into or filled to provide a smooth transition for the roadbed. The impact to soil resources from construction should not be significant.

Disturbance and compaction of soils will also occur when retrieval vehicles and equipment leave the established roads and traverse the desert pavement to pick up airdrop loads. Although retrieval operations will use established roads, washes and adjacent surfaces to the maximum extent possible to get close to the pickup point, each airdrop retrieval has the potential to leave its own marks in the soil surface. Such impacts would be widespread within and adjacent to the DZ. Disturbed areas would be susceptible to some wind and water erosion.

### 5.3.2 Continued Use of La Posa DZ - Alternative B (No-Action)

Construction of new roads would not be required under Alternative B. However, the soils found at La Posa DZ are more susceptible to erosion in areas where the surface is disturbed by airdrops and retrievals.

### 5.3.3 Mitigation

Impacts to soils from construction can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering design are incorporated into project development. Implementation of best management practices during construction would limit impacts on soils resulting from construction activities. Design and layout of access roads can be accomplished using existing landforms and drainage patterns to minimize alteration of natural processes. Off-road traffic will use washes and adjacent land to, whenever possible, to minimize long-term surface disturbance. Standard erosion control measures (e.g., silt fencing, sediment traps, application of water sprays, and revegetation of disturbed areas) would reduce potential impacts related to these characteristics. Retrieval vehicles will stay on established roads for as long as possible while on route to a pickup so as to minimize the distance necessary to travel off road on the desert surface. A mitigation and monitoring plan will facilitate assessing the condition of the land prior to high-altitude airdrop events and ensure monitoring of the area so that any out of the ordinary damage can be immediately assessed.

## 5.4 BIOLOGIC RESOURCES

Biologic resources include native and exotic plants and animals and the habitat in which they occur. Sensitive biologic resources are those plant and animal species listed as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) and/or by the state in which particular species may exist. Potential physical impacts such as habitat loss, noise, and impacts on surface water, are evaluated to assess potential adverse effects on biologic resources resulting from implementation of the alternatives.

Impacts to biologic resources are considered significant if: 1) habitat necessary for all or part of the life cycle of a species is lost as a result of the preferred alternative (e.g., lambing areas, migratory corridors, or wildlife watering areas); 2) threatened or endangered species are adversely affected; 3) a regional or local species is extirpated; 4) ecological processes are damaged to the extent that the ecosystem is no longer sustainable or biodiversity is impaired.

### 5.4.1 Mohave DZ - Alternative A

Implementation of this alternative would result in moderate impacts to vegetation. There are relatively few impacts to vegetation found throughout most of the area. Some damage to vegetation could result from vehicular traffic traversing the area and from the clearing of two areas for KTM tracking stations. Some of the cacti found at the site are protected under the Arizona Native Plant Law and caution will be used during construction and retrieval activities to avoid removal or damage to these plant species. Operational impacts in the DZ area could disturb some larger mammals, particularly, mule deer, wild horses and burros using desert washes in the vicinity for migratory corridors. These animals could be disturbed by the noise of moving vehicles during day and night operations and be temporarily displaced. Vehicular traffic on the DZ could possibly result in the "unintentional take" of ground nesting migratory birds. Disturbance to these species is of concern; however, the species common to this area

are also prevalent in other areas of YPG. In addition, the spring and fall migratory routines of mule deer through the major washes could be disrupted only if high levels of operational activity coincide with migratory periods. There have been desert tortoises observed in the vicinity of Site 18, however activities associated with Mohave DZ are not anticipated to result in adverse impacts (Morrill 2001).

#### **5.4.2 Continued Use of La Posa DZ - Alternative B (No-Action)**

Continued vehicular traffic on La Posa DZ does not pose additional threats to vegetation due to previous damage, however, vehicular travel to recover airdrops that miss the DZ target area could damage vegetation. Missed airdrops could end up outside the DZ and into or east of Tyson Wash, resulting in damage to vegetation as recovery vehicles attempt to traverse the wash or travel through it.

Continued use of La Posa DZ could disturb Tyson Wash, which provides habitat for various wildlife, including large mammals. Frequent vehicular traffic on the DZ could result in the "unintentional take" of ground nesting migratory birds.

#### **5.4.3 Mitigation**

Personnel should be briefed and instructed to avoid the presence of saguaro cacti, the Sonoran desert tortoise, and wild horses and burros. If Alternative A is selected, a trained member of the YPG environmental staff will survey the area for the presence of any sensitive species before any construction activity begins. If any sensitive species are discovered, a separate mitigation plan will be prepared, if necessary, to protect them. Sightings of any Sonoran desert tortoises will be reported to the installation biologist and the tortoise will, otherwise, be left alone. A buffer zone around Tyson Wash and the mesquite/galleta grass sites should be established and both areas should be avoided, whenever possible. Procedures recommended in the *Integrated Natural Resources Management Plan* (INRMP) will be followed when removal of native plants is required to accomplish mission objectives.

### **5.5 CULTURAL RESOURCES**

YPG's mission activities have the potential to significantly impact cultural resources. Implementation of either alternatives will have a significant impact if one or more of the following criteria are met: 1) prehistoric and historic sites eligible for the National Register of Historic Places are adversely affected; 2) Native American areas of cultural significance are adversely impacted.

#### **5.5.1 Mohave DZ - Alternative A**

An archaeological survey of the study area (Northland Research Inc. 2000) indicates that it is very unlikely that loads will land on archaeological sites because the sites are relatively small. The greatest potential for impacts to sites is from vehicles driving to and from landing sites.

### 5.5.2 Continued Use of La Posa DZ - Alternative B (No-Action)

There would be no change in the current level of ground disturbing activities and some archaeological or historic resources not previously collected or recorded could be disturbed by future airdrop missions conducted at La Posa DZ.

Potential impacts to cultural resources identified in previous surveys (Mooney 1988 and Ashworth 1991) could occur from vehicle traffic associated with the removal of vegetation, vehicle traffic associated with the test mission (recovery vehicles) and the landing of men and equipment on cultural resource sites. None of the sites identified during either survey were found to be eligible for the National Registry.

### 5.5.3 Mitigation

Within the study area for Alternative A, 16 archaeological sites were recorded. Precautions to avoid impacts to these sites will be taken. One significant site and a prehistoric trail have been marked for avoidance. Signs have been posted and gates have been put in place for the recovery vehicles to use. Site locations will be provided to test personnel. YPG is working with the Arizona State Historic Preservation Office (SHPO) to develop a monitoring program of site conditions within the proposed drop zone and buffer. In addition, the YPG Cultural Resource Manager will brief test personnel responsible for retrieval of equipment on or near the location of sites, so that these sites can be avoided.

If any previously undiscovered cultural resource sites are identified in the study area for Alternative B the installation cultural resources manager will be notified. Additionally, project personnel will receive a briefing on their stewardship responsibilities.

In the event of an inadvertent discovery of a potential cultural resource site, the guidelines outlined in the *Integrated Cultural Resources Management Plan* (YPG 2000c) will be implemented. Where construction must take place in the direct vicinity of a historic site, every attempt to preserve the site should be made by placement of protective barriers. Mitigation strategies will be determined through consultation with the Arizona SHPO and Native American Tribes.

## 5.6 HEALTH AND SAFETY

Issues addressed in this section relate to potential impacts to public and occupational health and safety associated with operations at YPG. Impacts are considered significant if the health and safety of the public or YPG personnel is adversely affected.

### 5.6.1 Mohave DZ - Alternative A

High-altitude airdrops have a slightly higher probability of missing the intended target. This is increased when the purpose of such airdrops is to test and/or develop as yet unproven technology. The primary public health and safety advantage associated with the proposed Mohave DZ location is that it moves the intended target area to the west much farther away from public lands and U.S. Highway 95. This significantly increases safety margins over continued use of other established DZs. Airdrop events would require traffic control of civilian vehicles on Cibola Lake Road.

Because of the remote location and the type of testing that occurs on YPG, there are potential risks to personnel and the public. Risks to worker health and safety would stem from



exposure to the extreme heat, lack of water, UXO, abandoned mines, and dangerous wildlife (e.g., rattlesnakes, Africanized honeybees, and scorpions). However, no changes to public exposures from such risks would be associated with implementation of Alternative A. Implementation of this alternative would require some construction activity on YPG, thereby potentially increasing the likelihood of a mishap involving personnel. All contractors are required to establish and maintain safety programs that would be monitored by the installation. In addition, YPG has stringent operating and security procedures designed to minimize or eliminate accidents and injuries as a result of mission-related activities (YPG 2000b).

#### **5.6.2 Continued Use of La Posa DZ - Alternative B (No-Action)**

Continued use of the La Posa DZ for high-altitude airdrop test would result in higher public safety concerns associated with the potential to lose control of airdrops and have the dropped items land in areas where members of the public could be in danger, such as on U.S. Highway 95.

Health and safety risks to YPG personnel and the public due to the remote location and the type of testing that occurs on YPG, there generally comparable to Alternative A. However, the potential for public safety concerns due to unauthorized intrusions into the DZ area would be higher due to its location much closer to U.S. Highway 95. Currently, airdrop events require traffic control of civilian vehicles on U.S. Highway 95 to ensure public safety.

#### **5.6.3 Mitigation**

YPG developed an *Installation Spill Contingency Plan* (YPG 2000a) to facilitate quick, appropriate responses in the event of an unauthorized release of any hazardous material. An environmental and safety briefing, detailing specific issues, will be given to all personnel involved in the activity. Construction and airdrop support personnel will be briefed on potential hazards. This can be accomplished through a review of the YPG Range Operations manual and unit Standing Operating Procedures (SOPs). Under Alternative A, Cibola Lake Road may require short-term closure to public traffic during some high-altitude airdrop tests. In the event that closure is required the road will be patrolled and cleared by YPG law enforcement and security personnel prior to start of an airdrop. Under Alternative B, the same would be true for U.S. Highway 95.

### **5.7 TRANSPORTATION, UTILITIES, AND INFRASTRUCTURE**

Impacts to transportation, utilities, and infrastructure are evaluated for potential disruption or improvement of current transportation patterns and systems, and deterioration or improvements of existing levels of service. Impacts may arise from physical changes to circulation (e.g., closing, rerouting, or creating roads), construction activity, introduction of construction-related traffic on local roads, or changes in daily or peak-hour traffic volumes, increased by either indirect or direct workforces, and population changes related to facility activities. This section discusses potential impacts and mitigation to transportation, utilities and internal support infrastructure on the installation. Impacts are considered significant if the following criterion are met: 1) transportation characteristics are reduced to a level that impacts safety or movement of people, goods, and services; 2) utilities or infrastructure are taxed beyond their capacity to support installation mission requirements.

### 5.7.1 Mohave DZ - Alternative A

Implementation of Alternative A would have a negligible impact on the existing transportation network at YPG. Implementation of this alternative would require delivery of small amounts of construction materials to the sites for the instrumentation pads. Construction traffic would comprise a small portion of the total existing traffic and would be of short duration. Many of the construction vehicles would be driven to and kept onsite during construction, resulting in fewer round trips. In addition, increases in traffic associated with construction activity would be temporary and should not involve an extensive number of equipment.

Upon completion of dirt road construction into the Mohave DZ area improved access into the Mohave Wash area and into the area east of Mohave Wash would be achieved. The additional roads and improved road surfaces would be an improvement of the existing YPG transportation network. Traffic associated with airdrop events at the DZ and its associated data gathering locations would usually consist of a few 4-wheel drive vehicles for the ground support team plus the recovery vehicle(s). This would comprise a tiny portion of the existing traffic along U.S. Highway 95.

The widened dirt road originating south of Site 16 and the new dirt road at the southwest corner of the DZ would require periodic maintenance not currently part of the infrastructure maintenance workload.

No changes to utilities or services are anticipated under the requirements associated with the Proposed Action.

### 5.7.2 Continued Use of La Posa DZ - Alternative B (No-Action)

Under this alternative traffic on U.S. Highway 95 could be impacted by short-term closure of the sections of highway adjacent to the DZ. The closures would be required to eliminate the potential for accidents to occur as a result of airdrops inadvertently drifting onto the public roadway. No additions to the installation road network would result, and consequently no additional requirements for road maintenance would result.

### 5.7.3 Mitigation

Short-term closures of Cibola Lake Road or U.S. Highway 95 under Alternative A and B, respectively, would be necessary to ensure that civilian vehicles are not in the area under an airdrop during use of the DZ.

## 5.8 AESTHETICS

The significance of potential impacts on visual resources is based on the level of visual sensitivity in the area. Visual sensitivity is defined as the degree of public interest in a visual resource and concern over adverse changes in the quality of that resource. This section examines potential impacts to aesthetic values resulting from the implementation of either of the action alternatives. Impacts to these areas are considered significant if the panoramic views or scenic beauty of specific areas are permanently degraded.

### 5.8.1 Mohave DZ – Alternative A

Activities associated with the proposed Mohave DZ would be visually consistent with existing activities at the installation and available views associated with the Cibola Region. Airdrop events would be of very short duration, and the visual environment of YPG is already characteristic of a military installation; therefore, no significant impact to visual features would occur upon implementation of the preferred alternative.

### 5.8.2 Continued Use of La Posa DZ – Alternative B (No-Action)

Aesthetic values off the installation could be adversely impacted by continued use of La Posa DZ. There is potential for high-altitude airdrops for airdrops to drift outside the installation boundary and onto KNWR lands, thereby effecting the aesthetic values that may be associated with wilderness areas within the refuge.

### 5.8.3 Mitigation

No mitigation for aesthetics has been identified necessary for either alternative.

## 5.9 CUMULATIVE IMPACTS

In accordance with NEPA, a discussion of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the near future is required. Cumulative impacts on environmental resources result from incremental impacts of proposed actions, when combined with other past, present, and reasonably foreseeable future projects in an area. Cumulative impacts can result from minor, but collectively substantial, actions undertaken over a period of time by various agencies (i.e., Federal, state, and local) or individuals.

Soil, biological, and cultural resources may be exposed to negative impacts by operations of a DZ to support high-altitude airdrops. In particular, vehicles supporting airdrop events that traverse the DZ area over time could cause soil compaction and potential for wind and water erosion. Such vehicles could also impact sensitive species or result in unplanned take of some plants and animals. Vehicles could also damage cultural resources; however, existing survey results can assist in the avoidance of cultural resources. Implementation of mitigation plans would limit the known potential impacts to the resources potentially effected by the establishment of a high-altitude DZ. A long-term monitoring plan would assist in evaluating unknown impacts so proper mitigation techniques could be implemented in the future.

Regionally, no development (e.g., residential, commercial, or industrial) or infrastructure upgrades have recently been completed or are planned that would affect or be affected by implementation of the Proposed Action at YPG. Therefore, based on information provided by regional planning agencies, there would be no significant cumulative impacts associated with implementation of the Proposed Action.

Cumulative impacts associated with airspace management and utilization are determined by adding the potential changes in utilization associated with a Proposed Action to established airspace utilization. Under this proposal, no change in airspace utilization (i.e., sorties) is proposed. Consequently, no change in cumulative impacts for airspace management and utilization would occur.

## 6.0 LIST OF PREPARERS AND AGENCIES CONSULTED

On February 20, 2001, the Command Technology Directorate mailed a formal written correspondence addressing the Proposed Action to various agencies and interested parties. The written correspondence informed each recipient of the ongoing preparation of an environmental assessment for this proposal. The written correspondence was mailed to the following organizations:

Ak-Chin Indian Community; Maricopa, AZ  
\*Arizona Clearing House; Phoenix, AZ  
Arizona Department of Agriculture; Phoenix, AZ  
\*Arizona Game and Fish Department; Phoenix, AZ  
\*Arizona Game and Fish Department; Yuma, AZ  
Arizona Department of Environmental Quality; Phoenix, AZ  
\*Arizona State Historical Preservation Office; Phoenix, AZ  
\*Bureau of Land Management; Yuma, AZ  
Bureau of Reclamation; Yuma, AZ  
Bureau of Indian Affairs; Phoenix, AZ  
\*Chemehuevi Indian Tribe; Havasu Lake, CA  
\*Cocopah Indian Tribe; Somerton, AZ  
\*Colorado River Tribal Council; Parker, AZ  
Fort McDowell Mohave-Apache Indian Community; Fountain Hills, AZ  
\*Fort Mohave Tribal Council; Needles, CA  
Gila River Pima-Maricopa Indian Community; Sacaton, AZ  
\*Hopi Tribal Council; Kykotsmobi, AZ  
\*Imperial National Wildlife Refuge; Martinez Lake, AZ  
\*Kofa National Wildlife Refuge; Yuma, AZ  
Natural Resources Conservation Service; Yuma, AZ  
\*Quechan Indian Tribe; Yuma, AZ  
Salt River Pima-Maricopa Indian Community; Scottsdale, AZ  
San Carlos Apache Tribe; San Carlos, AZ  
Sierra Club; Phoenix, AZ  
Audubon Club; Yuma, AZ  
\*Tohono O'odham Nation, Cultural Affairs Office; Sells, AZ  
\*Tohono O'odham Nation, Cultural Preservation Committee; Sells, AZ  
\*U.S. Fish and Wildlife Service; Phoenix, AZ  
U.S. Environmental Protection Agency, Region IX; San Francisco, CA  
Wellton - Mohawk Natural Resources Conservation Service; Roll, AZ  
Yavapai-Apache; Camp Verde, AZ  
\*Yavapai-Prescott Tribe; Prescott, AZ  
Yuma County Planning and Zoning Division; Yuma, AZ

## 6.1 COMMENT AND REVIEW PERIOD

The 90% Draft EA was sent out to the above-indicated agencies<sup>2</sup>, for a 30-day public review period. Copies of the EA are available upon request. Inquiries should be directed to U.S. Army Yuma Proving Ground, Command Technology Directorate, Mr. Charles Botdorf, CSTE-DTC-YP-CD-E, Yuma, AZ 85365-9107 or by calling (928) 328-2754 or submitting a fax to (928) 328-6696 or Jason Associates Corporation at (928) 328-2630 or by sending a fax to (928) 328-2565.

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<sup>2</sup> \*Indicates which agencies were mailed the 90% Draft EA as requested.

## **6.2 LIST OF INDIVIDUALS CONSULTED**

### **6.2.1 U. S. Army Yuma Proving Ground**

Charles Botdorf, Compliance Program Manager  
Delores Gauna, Cultural Resources Manager  
Valerie Morrill, Conservation Program Manager  
James Stewart, Aviation Systems Division, Project Engineer  
Douglas Sorensen, Range Control, Air Traffic and Airspace Officer

### **6.2.3 Contractual Support**

This environmental assessment was prepared by Jason Associates Corporation for the Command Technology Directorate at YPG. The following persons made major technical contributions:

William Berry, Ph.D., Senior Environmental Scientist  
Kimberly Maloney, Task Manager, Environmental Specialist  
Jeffrey McCann, Senior Environmental Scientist  
Sergio Obregon, Natural Resources Specialist  
Jeffrey Weiler, Senior Environmental Scientist  
Renee Young, Environmental Scientist

## 7.0 SUMMARY OF FINDINGS

Two alternatives were evaluated for potential impacts on environmental resources, the Proposed Action (Alternative A) and the No-Action Alternative (Continued Use of La Posa DZ - Alternative B). Potential impacts to soils, biological resources, and cultural resources were determined to be associated with both Alternatives A and B. However, implementation of best management practices or proper mitigation plans should render these impacts not significant. Alternative B (No-Action) could result in high-altitude airdrops landing off the installation on adjacent public lands or U.S. Highway 95. If airdrops land on areas outside of the control of YPG there is an increased risk of potentially significant impacts to public health and safety.

The results of the analysis in this EA, presented in Chapter 5.0, support Alternative A (establish the Mohave DZ) as the preferred alternative. This alternative results in manageable or negligible environmental impacts and is the most logistical, feasible approach to accomplishing the Proposed Action, while supporting the diverse mission of YPG. The alternative also improves public safety associated with airdrops. Impacts to water, air quality, noise, socioeconomic resources, and aesthetics are similar for both alternatives considered. Alternative B would result in not establishing a new high-altitude DZ and continuing to use the La Posa DZ for conducting high-altitude airdrops.

Based on this analysis of impacts to the various resource areas, no issues were identified that would preclude the recommendation that Alternative A (establish the Mohave DZ) be implemented and a Finding of No Significant Impact (FNSI) be issued for the Proposed Action.

Monitoring and mitigation plans will be developed and implemented, as necessary, to minimize impacts.

## 8.0 REFERENCE LIST

- AGFD 1996 Arizona Game and Fish Department (AGFD). 1996. *Wildlife of Special Concern in Arizona*. (Public Review Draft). Phoenix: Arizona Game and Fish Department.
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**Environmental Assessment****Mohave Drop Zone**

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